CLAIMS

What is claimed is:

1. A method of differentiating between a plurality of types of writable discs having wobbles with corresponding predetermined frequencies comprising absolute addresses and/or various pieces of information, the method comprising:

controlling a focus of a light spot on a recording surface of one of the writable discs using a pickup unit; and

discerning a type of the one writable disc from the plurality of types of writable discs using an amplitude of a wobble signal detected while controlling the focus.

2. The method of claim 1, wherein the discerning the type of the one writable disc comprises using the amplitude of the wobble signal which has passed through a band-pass filter having a predetermined frequency.

3. The method of claim 1, wherein the discerning the types of the one writable disc from the plurality of types of writable discs comprises using a ratio of the amplitude of the wobble signal to a sum signal of signals detected by a photodiode in the pickup unit to discern the type of the one writable disc.

4. A method of differentiating between a plurality of types of writable discs having wobbles with corresponding predetermined frequencies comprising absolute addresses and/or various pieces of information, the method comprising:

controlling a focus of a light spot on a recording surface of a received writable disc using a pickup unit; and

discerning a type of the received writable disc from the plurality of types of writable discs using a wobble phase-locked loop signal that comprises a detected wobble signal which has passed through a phase-locked loop.

5. The method of claim 4, wherein the discerning the type of the received writable disc from the plurality of types of the writable discs comprises checking whether the wobble phase-locked loop lock signal has an active section which corresponds to a variation in the wobble phase-locked loop lock signal as compared to a predetermined signal level.

6. The method of claim 4, wherein the discerning the type of the disc from the plurality of types of writable discs comprises checking whether a sum time in an active section of the wobble phase-locked loop lock signal within a predetermined period of time is greater than a reference time, and the active section corresponds to a variation in the wobble phase-locked loop lock signal as compared to a predetermined signal level.

7. A method of determining a type of a writable disc having wobbles with a predetermined frequency comprising absolute addresses and/or various pieces of information received by an optical disc system comprising a pickup unit and a servo unit, the method comprising:

setting a default mode to a mode of any type of disc;

controlling the servo unit in an on-focus state to adjust a focus of a light spot on a recording surface of the writable disc using the pickup unit;

detecting an amplitude of a wobble signal in the on-focus state;

comparing the amplitude of the wobble signal with an amplitude of a reference wobble signal to obtain a comparison result; and

using the comparison result to determine if the writable disc corresponds to a type of disc corresponding to the default mode or another type of disc.

8. The method of claim 7, wherein the controlling of the servo unit comprises:

controlling a spindle motor, which rotates the writable disc, at a constant angular velocity.

9. The method of claim 7, wherein the type of disc corresponding to the default mode is a DVD-R/RW and the another type of disc is a DVD+R/RW.

10. The method of claim 7, wherein the detecting the amplitude of the wobble signal comprises detecting the amplitude of the wobble signal using a band-pass filter having a predetermined frequency.

11. The method of claim 7, wherein the comparing the amplitude and the determining the type of the writable disc comprises using a ratio of the amplitude of the wobble signal to a sum signal of signals detected by a photodiode in the pickup unit.

12. A method of detecting a type of a writable disc having wobbles with a predetermined frequency comprising absolute addresses and/or various pieces of information received by an optical disc system comprising a pickup unit and a servo unit, the method comprising:

setting a default mode to a mode of any type of disc;

controlling the servo unit in an on-focus state to adjust a focus of a light spot on a recording surface of the writable disc using the pickup unit;

providing a sum time in an active section of a wobble phase-locked loop lock signal generated after a detected wobble signal passes through a phase-locked loop unit in the on-focus state, the active section corresponding to a variation in the wobble phase-locked loop lock signal as compared to a predetermined signal level;

comparing the sum time in the active section of the wobble PLL lock signal with a reference time to provide a comparison result; and

based on the comparison result, discerning the type of the writable disc as being one of one type of disc and another type of disc.

13. The method of claim 12, wherein the controlling of the servo unit comprises:

controlling a spindle motor, which rotates the writable disc, at a constant angular velocity.

14. The method of claim 12, wherein the type of disc corresponding to the default mode is a DVD-R/RW and the another type of disc is a DVD+R/RW.

15. The method of claim 12, wherein the providing of the sum time in the active section of the wobble phase-locked loop lock signal comprises:

detecting the wobble signal using a band-pass filter having a predetermined frequency;

passing the wobble signal through the phase locked loop to detect the wobble PLL lock signal; and

calculating the sum time in the active section of the wobble PLL lock signal.

16. The method of claim 15, wherein the discerning the type of the writable disc comprises discerning whether the writable disc is the one type of disc or the another type of disc by checking whether the sum time in the active section of the wobble phase-locked loop lock signal within a predetermined period of time is greater than a reference time.

17. A writable disc discriminating apparatus for use in an optical disc system which comprises a pickup unit and a servo unit and which performs recording on and/or reproduction from a plurality of types of writable discs having corresponding wobbles with respective predetermined frequencies comprising absolute addresses and/or various pieces information, the writable disc discriminating apparatus comprising:

a servo controller that controls the servo unit in an on-focus state to adjust a focus of a light spot on a recording surface of one of the writable discs using the pickup unit; and

a discriminator that uses an amplitude of a wobble signal detected while in the on-focus state to determine a type of the one writable disc differentiated from the plurality of types of writable discs.

18. The apparatus of claim 17, wherein the discriminator comprises a band-pass filter that passes only a predetermined wobble frequency and that detects the wobble signal.

19. The apparatus of claim 17, wherein the discriminator differentiates the disc from the plurality of types of writable discs using a ratio of the amplitude of the wobble signal to a sum signal of signals detected by a photodiode in the pickup unit.

20. The apparatus of claim 17, wherein the servo controller controls a spindle motor, which rotates the writable discs in the on-focus state, at a constant angular velocity.

21. The apparatus of claim 17, wherein one type of the writable disc among the plurality of types of writable discs is a DVD-R/RW and another type of the writable disc is a DVD+R/RW.

22. The apparatus of claim 18, wherein the discriminator comprises:

a signal processor that measures the amplitude of the wobble signal; and

a system controller that compares the amplitude of the wobble signal with an amplitude of a reference wobble signal to differentiate the disc from the plurality of types of discs.

23. A writable disc discriminating apparatus for use in an optical disc system which comprises a pickup unit and a servo unit and which performs recording on and/or reproduction from a plurality of types of writable discs that include corresponding wobbles having respective predetermined frequencies comprising absolute addresses and/or various pieces information, the writable disc discriminating apparatus comprising:

a servo controller that controls the servo unit in an on-focus state to adjust a focus of a light spot on a recording surface of a received one of the writable discs using the pickup unit; and

a discriminator that uses a wobble phase-locked loop lock signal that includes a wobble signal detected while in the on-focus state and that has passed through a phase locked loop so as to determine a type of the one writable disc as discerned from the plurality of writable discs.

24. The apparatus of claim 23, wherein the discriminator differentiates between the plurality of types of writable discs by checking whether the wobble phase-locked loop lock signal has an active section which corresponds to a variation in the wobble phase-locked loop lock signal as compared to a predetermined signal level.

25. The apparatus of claim 23, wherein the discriminator differentiates the disc from the plurality of types of writable discs by checking whether a sum time in an active section of the wobble phase-locked loop lock signal within a predetermined period of time is greater than a reference time, and the active section corresponds to a variation in the wobble phase-locked loop lock signal as compared to a predetermined signal level.

26. The apparatus of claim 23, wherein the servo controller controls a spindle motor, which rotates the writable discs in the on-focus state, at a constant angular velocity.

27. The apparatus of claim 23, wherein a type of disc among the plurality of types of writable discs is a DVD-R/RW and another type of disc is a DVD+R/RW.

28. The apparatus of claim 23, wherein the discriminator comprises:

a band-pass filter that filters only a predetermined frequency from an electric signal detected by the pickup unit to detect the wobble signal;

a signal processor that passes the wobble signal through the phase locked loop to measure the sum time in the active section of the wobble phase-locked loop lock signal; and

a system controller that compares the sum time in the active section of the wobble phase-locked loop lock signal with a reference time to discriminate the disc from the plurality of types of writable discs based on the comparison result.

29. A method of determining a type of disc, comprising:

detecting a wobble signal according to wobbles on the disc which have a predetermined frequency; and

determining the type of the disc as discerned between at least two types of discs according to the detected wobble signal.

30. The method of claim 29, wherein:

the detecting the wobble signal comprises focusing a light beam on a recording surface of the disc, and

the determining the type of the disc comprises determining the type of the disc according to the wobble signal detected while focusing the light beam on the recording surface.

31. The method of claim 30, further comprising transferring data with respect to the recording surface using an information signal other than the wobble signal according to the determined type of the disc, wherein the detecting the wobble signal occurs prior to transferring the data.

32. The method of claim 29, wherein the determining the type of the disc comprises using an amplitude of the wobble signal to discern between the at least two types of discs.

33. The method of claim 32, wherein the determining the type of the disc comprises band-pass filtering the wobble signal and using the amplitude of the band-pass filtered wobble signal to determine the type of the disc.

34. The method of claim 29, further comprising detecting a second signal while detecting the wobble signal, wherein the determining the type of the disc comprises using a ratio of the wobble signal to the second signal.

35. The method of claim 29, further comprising phase-locked looping the detected wobble signal to produce a wobble phase-locked loop signal, wherein the determining the type of the disc comprises using the wobble phase-locked loop signal to determine the type of the disc.

36. The method of claim 35, wherein the determining the type of the disc further comprises detecting an extent to which the wobble phase-locked loop signal varies from a predetermined reference level, and determining the type of the disc according to the detected extent to which the wobble phase-locked loop varies from the predetermined reference level.

37. The method of claim 29, wherein:

the detecting the wobble signal comprises focusing the light beam according to a default mode, the default mode corresponding to a mode used to transfer data with respect to one of the two types of discs, and

the determining the type of the disc comprises comparing the detected wobble signal with a reference wobble signal corresponding to a wobble signal detected using the mode with respect to the one type of the disc to determine if the disc is the one type of the disc.

38. The method of claim 37, further comprising transferring the data according to the default mode if the disc is determined to be the one type, and transferring the data according to another mode other than the default mode if the disc is determined not to be the one type.

39. A disc discriminating apparatus for use in an optical disc system that performs recording on and/or reproduction from a plurality of types of discs having corresponding wobbles with respective predetermined frequencies, the disc discriminating apparatus comprising:

a controller that controls a pickup unit to focus a light spot on a recording surface of a disc; and

a discriminator that uses a wobble signal detected while the controller focuses the light spot on the recording surface to determine a type of the disc as differentiated from the plurality of types of discs.

40. The disc discrimination apparatus of claim 39, wherein the controller further controls the pickup unit transfer data with respect to the recording surface using an information signal other than the wobble signal according to the determined type of the disc, and the wobble signal is detected prior to transferring the data.

41. The disc discrimination apparatus of claim 39, wherein the controller determines the type of the disc using an amplitude of the wobble signal to discern between at least two types of discs.

42. The disc discrimination apparatus of claim 41, further comprising a band pass filter which band pass filters the wobble signal, and the controller uses an amplitude of the band-pass filtered wobble signal to determine the type of the disc.

43. The disc discrimination apparatus of claim 39, wherein the controller receives a second signal detected while detecting the wobble signal, and determines the type of the disc comprises using a ratio of the wobble signal to the second signal.

44. The disc discrimination apparatus of claim 39, further comprising a phase-locked loop unit which phase-locked loops the detected wobble signal to produce a wobble phase-locked loop signal, wherein the controller uses the wobble phase-locked loop signal to determine the type of the disc.

45. The disc discrimination apparatus of claim 44, wherein the controller detects an extent to which the wobble phase-locked loop signal varies from a predetermined reference level, and determines the type of the disc according to the detected extent to which the wobble phase-locked loop varies from the predetermined reference level.

46. The disc discrimination apparatus of claim 39, wherein:

prior to determining the type of the disc, the controller controls the pickup unit to detect the wobble signal according to a default mode, the default mode corresponding to a mode used to transfer data with respect to one of the plurality of types of discs, and compares the detected wobble signal with a reference wobble signal corresponding to a wobble signal detected when using the mode with respect to the one type of disc to determine if the disc is the one type of the disc.

47. The disc discrimination apparatus of claim 46, wherein the controller further comprising transfers the data according to the default mode if the disc is determined to be the one type, and transfers the data according to another mode other than the default mode if the disc is determined not to be the one type.